

$$\textcircled{3} \quad \frac{x^2 - 6x - 27}{2x^2 + 2x} \div \frac{x^2 - 14x + 45}{x^2} \quad \curvearrowright$$

$$\frac{x^2 - 6x - 27}{2x^2 + 2x} \cdot \frac{x^2}{x^2 - 14x + 45}$$

$$\frac{\cancel{(x-9)}(x+3)}{\cancel{2x}(x+1)} \cdot \frac{x^2}{\cancel{(x-9)}(x-5)} = \boxed{\frac{x(x+3)}{2(x+1)(x-5)}}$$

$$\textcircled{6} \quad \frac{x+1}{x^2+4x+4} - \frac{6}{x^2-4}$$

$$\frac{(x-2) \cdot \overset{\text{follow}}{(x+1)}}{(x-2)(x+2)(x+2)} - \frac{6(x+2)}{(x-2)(x+2)(x+2)}$$

$$\frac{x^2 + \cancel{4x} - 2}{(x-2)(x+2)(x+2)} - \frac{6x + 12}{(x-2)(x+2)(x+2)}$$

$$\frac{x^2 - 1x - 2 - 6x - 12}{(x-2)(x+2)(x+2)} = \boxed{\frac{x^2 - 7x - 14}{(x-2)(x+2)^2}}$$

## Solving Rational Equations

① By cross multiplying

$$\begin{array}{r} 3 \quad \quad 9 \\ \hline x+1 \quad 4x+5 \end{array}$$

$$\boxed{x =}$$

$$x = -2 \checkmark \text{ works}$$

$$(3)(4x+5) = (9)(x+1)$$

$$\begin{array}{r} 12x + 15 = 9x + 9 \\ -9x \quad \quad -9x \\ \hline \end{array}$$

$$\begin{array}{r} 3x + 15 = 9 \\ -15 \quad \quad -15 \\ \hline \end{array}$$

$$\begin{array}{r} 3x = -6 \\ \div 3 \quad \quad \div 3 \\ \hline \end{array}$$

$$\boxed{x = -2}$$

Check to make sure you don't get zero in denominator.

\* Check for extraneous solutions

② Solving by finding Least Common Denominator (LCD)

(Have adding or subtraction on at least  
1 side)

$$\frac{4}{4} \left( \frac{5}{x} \right) + \frac{x}{x} \left( \frac{7}{4} \right) = \left( -\frac{9}{x} \right) \left( \frac{4}{4} \right)$$

$$\frac{20}{4x} + \frac{7x}{4x} = \frac{-36}{4x}$$

$$\boxed{20 + 7x = -36}$$

~~20~~ -20

$$\frac{7x}{7} = \frac{-56}{7}$$

$$\boxed{x = -8}$$

✓

why 4x goes away

$$\frac{20 + 7x}{4x} = \frac{-36}{4x}$$

$$\frac{4x(20 + 7x)}{4x} = \frac{4x(-36)}{4x}$$

Does not  
give zero in denominator.

③ Solve equation w/ 2 Solutions

$$1 - \frac{8}{x-5} = \frac{3}{x}$$